# ESS Supplier Market Intelligence Program H2 2022 Report Sample

# ESS Market Intelligence Half-Yearly Report

The Clean Energy Associates' Supplier Market Intelligence Program (SMIP) is a half-yearly independent, unbiased market intelligence report of the world's top lithium-ion cell manufacturers and ESS integrators.

Access to timely, accurate information is strategically important, and its absence creates sizable risk. The program brings together objective, high-quality, multi-sourced, and verified data to create the supplier market intelligence report. The report includes detailed information and analysis of capacities, along with a detailed product overview of each supplier.

The half-yearly report contains critical up-to-date operational data for the largest suppliers, such as CATL, BYD, LGES, SKI, and Samsung SDI. CEA's research team utilizes high-quality, verified data to create the SMIP report and deliver supplier insights straight from technical management teams.

CEA's Supplier Market Intelligence Program provides deep market intelligence on key battery cell suppliers and industry players. Information on capacity, product development, and industry positioning is delivered to assist clients in assessing the risks and opportunities associated with many potential vendors and products in the highly dynamic storage industry.

- Covers all major industry players
- Timely accurate, and detail-oriented
- Drives supplier sourcing decisions
- Compares suppliers based on their scale, market reach, and product development

# H2 2022 ESS SMIP

- Cell supplier overview
- Cell supplier capacity forecasts
- Supplier shipment volume
- Integrator overview

# Cell Supplier Overview

# SMIP cell supplier overview

| Supplier | Cells | PCS | Residential Integration | Large-scale Integration | EV |
|---|---|---|---|---|---|
| **Major Chinese Cell Suppliers** | | | | | |
| **CATL** | ✓ | ---- | ---- | ---- | ---- |
| **BYD** | ✓ | ---- | ---- | ---- | ---- |
| **Gotion** | ✓ | ---- | ---- | ---- | ---- |
| **EVE Energy** | ✓ | ---- | ---- | ---- | ---- |
| **Narada** | ✓ | ---- | ---- | ---- | ---- |
| **Envision AESC** | ✓ | ---- | ---- | ---- | ---- |
| **Major International Cell Suppliers** | | | | | |
| **LGES** | ✓ | ---- | ---- | ---- | ---- |
| **Panasonic** | ✓ | ---- | ---- | ---- | ---- |
| **Samsung SDI** | ✓ | ---- | ---- | ---- | ---- |
| **SKI** | ✓ | ---- | ---- | ---- | ---- |
| **Emerging Cell Suppliers** | | | | | |
| **CALB** | ✓ | ---- | ---- | ---- | ---- |
| **REPT** | ✓ | ---- | ---- | ---- | ---- |
| **SVOLT** | ✓ | ---- | ---- | ---- | ---- |
| **Pylontech** | ✓ | ---- | ---- | ---- | ---- |
| **Great Power** | ✓ | ---- | ---- | ---- | ---- |
| **HIthium** | ✓ | ---- | ---- | ---- | ---- |

| | |
|---|---|
| ✓ | Supplier actively manufactures or performs this function |
| ✘ | Supplier does not manufacture or perform this function |
| ~ | Supplier is developing this stage of production or integration |

# SMIP cell supplier evaluation matrix overview

| Supplier | Cell manufacturing capacity | R&D investment | 2022 ESS battery shipment | CEA quality audits | Product development | Average score |
|---|---|---|---|---|---|---|
| **BYD** | 4.0 | ---- | ---- | ---- | ---- | ---- |
| **CALB** | 2.0 | ---- | ---- | ---- | ---- | ---- |
| **CATL** | 5.0 | ---- | ---- | ---- | ---- | ---- |
| **Envision AESC** | 1.5 | ---- | ---- | ---- | ---- | ---- |
| **EVE Energy** | 2.5 | ---- | ---- | ---- | ---- | ---- |
| **Gotion** | 3.0 | ---- | ---- | ---- | ---- | ---- |
| **Great Power** | 0.5 | ---- | ---- | ---- | ---- | ---- |
| **Hithium** | 1.0 | ---- | ---- | ---- | ---- | ---- |
| **LGES** | 4.5 | ---- | ---- | ---- | ---- | ---- |
| **Narada** | 0.5 | ---- | ---- | ---- | ---- | ---- |
| **Panasonic** | 2.0 | ---- | ---- | ---- | ---- | ---- |
| **Pylontech** | 0.5 | ---- | ---- | ---- | ---- | ---- |
| **REPT Battero** | 1.5 | ---- | ---- | ---- | ---- | ---- |
| **Samsung SDI** | 3.0 | ---- | ---- | ---- | ---- | ---- |
| **SKI** | 2.0 | ---- | ---- | ---- | ---- | ---- |
| **SVOLT** | 1.5 | ---- | ---- | ---- | ---- | ---- |

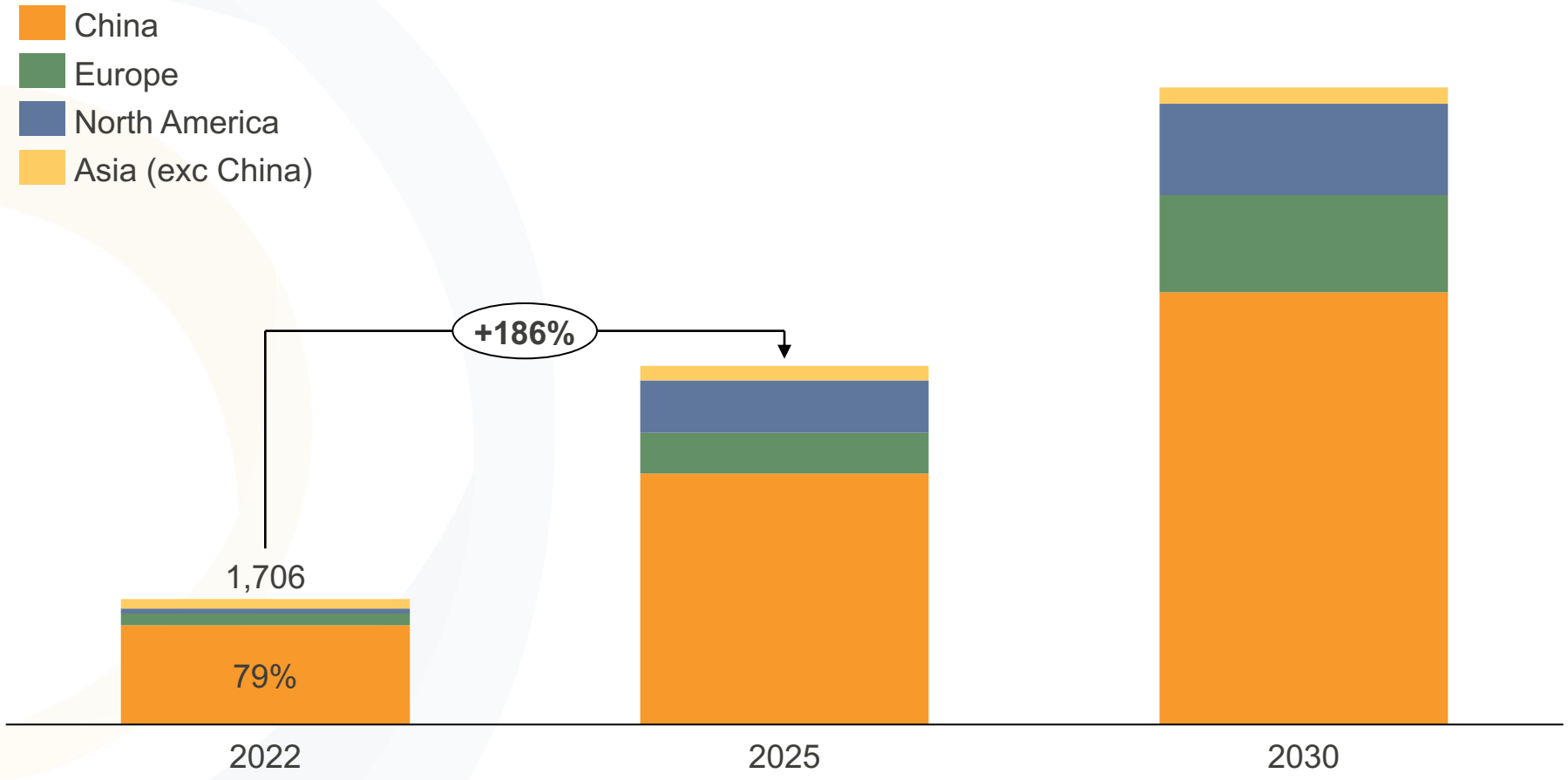
# Cell Supplier Capacity Forecasts

# Global LIB cell nameplate capacity set to grow ~3x by 2025

## North America's planned capacity forecasted to outpace Europe's due to the IRA

- China remains the leading manufacturing hub for battery cells, but its share will decline in coming years
- North America became the fastest-growing regional market by the end of 2022 in terms of planned cell capacity fuelled by the IRA
- Europe witnessed delays and cancellations of several planned production facilities, due in large part to high energy prices and more attractive policy support from other regional markets

**Global LIB cell manufacturing capacity outlook (GWh)**

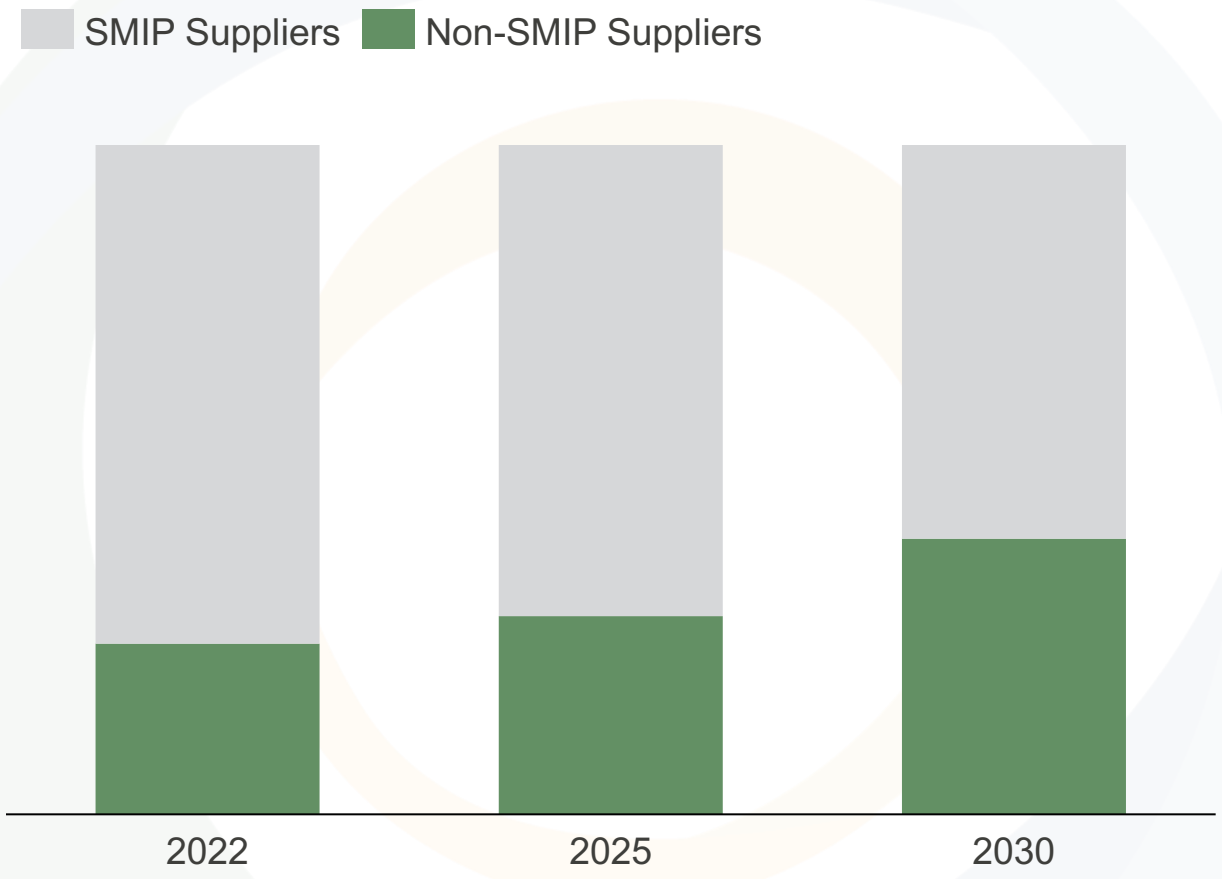



**Notes |** Capacity compiled by CEA based on supplier reports, press releases, and expansion announcements. Benchmark Mineral Intelligence Megafactory Assessment Report (March 2023).

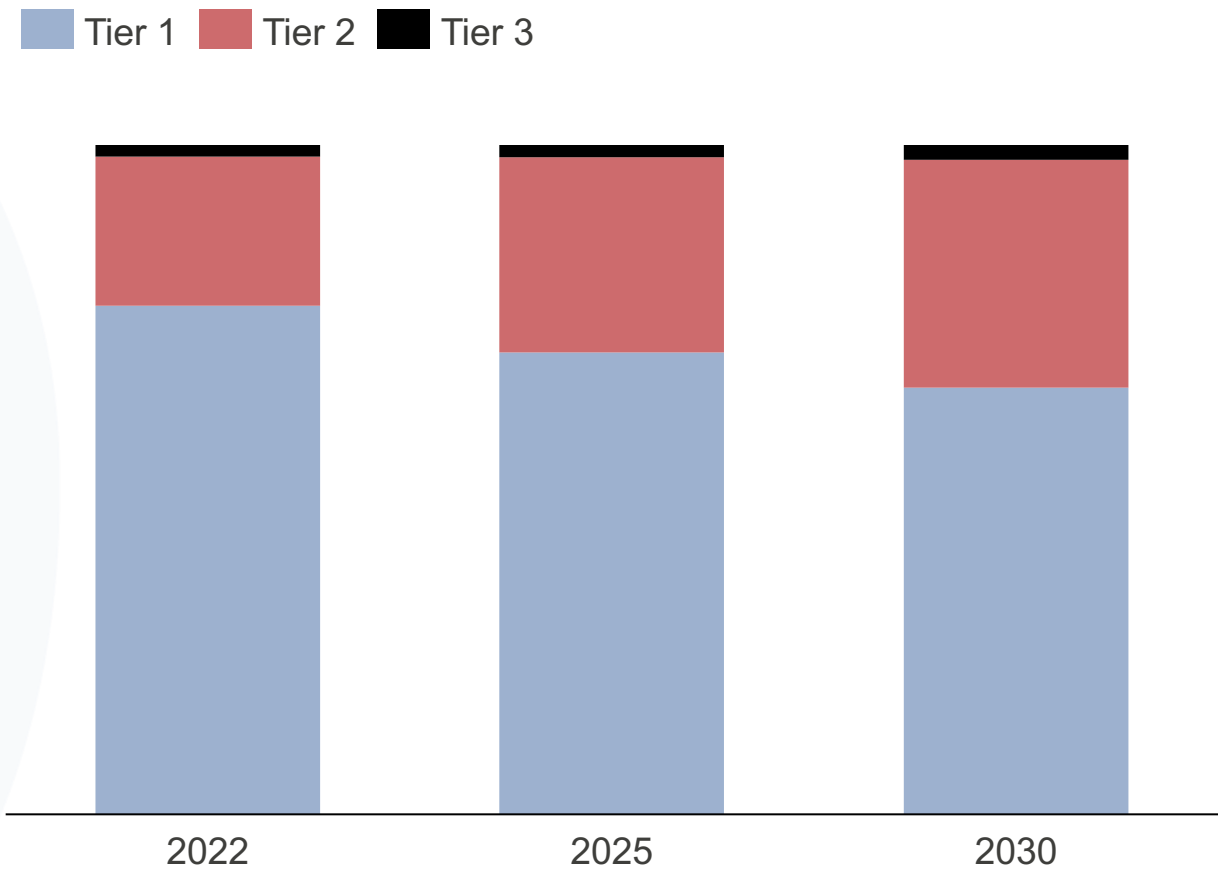
# SMIP suppliers comprise the majority of global LIB cell capacity

## Tier 1 cell suppliers account for most of the total SMIP cell capacity

**SMIP supplier capacity vs. non-SMIP capacity (GWh, %)**

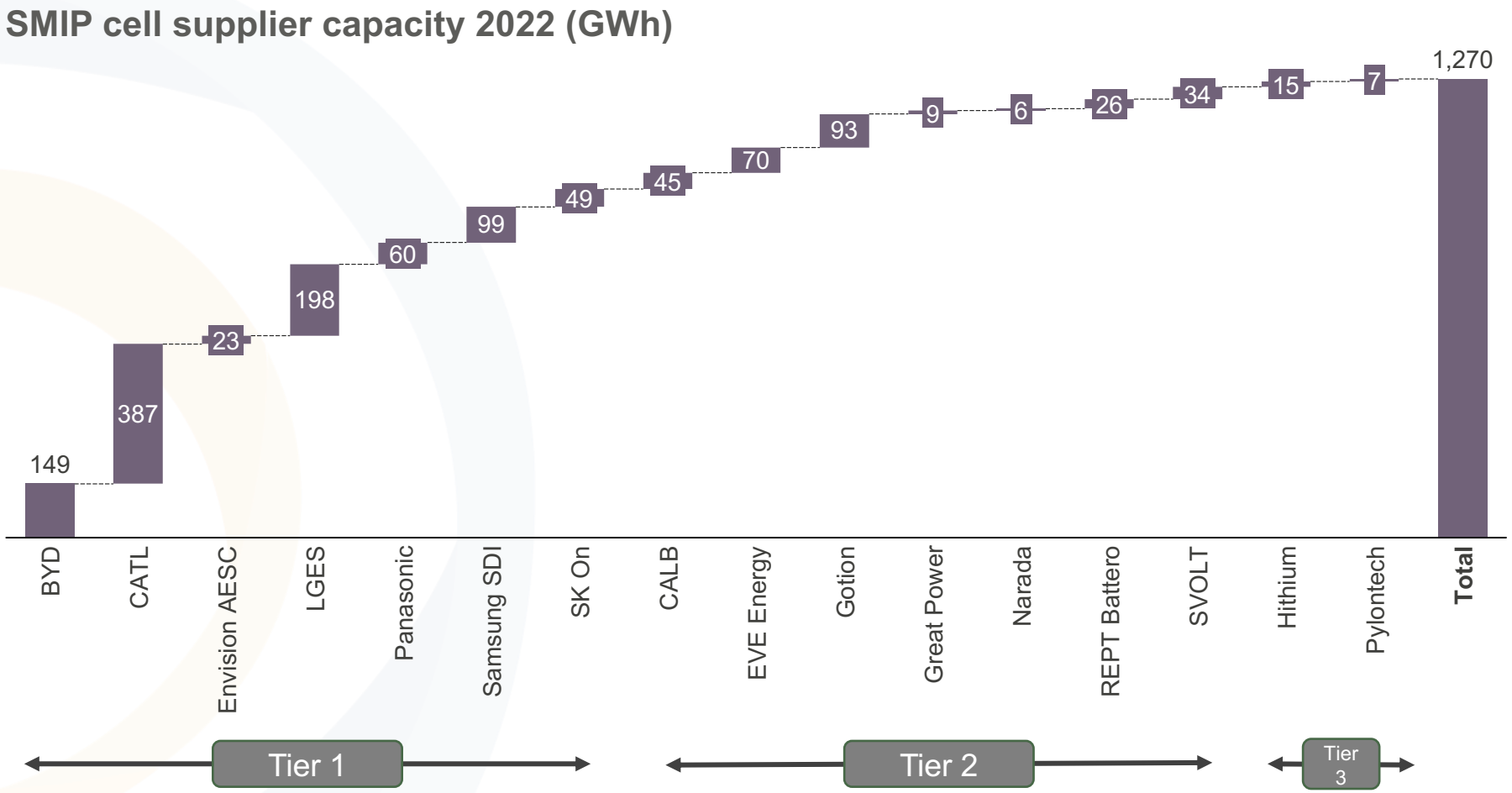



**SMIP cell production capacity by tier (%)**



# Tier 1 cell suppliers account for most of the total cell capacity

- Tier 1 cell suppliers have announced 75% of the 2022 SMIP cell production capacity
- The only Tier 3 cell suppliers included in the SMIP are Hithium and Pylontech, focusing solely on ESS battery cell production with high growth rate projections
- Increased fragmentation is expected as the expansion of the ESS market will enable the growth of Tier II/III suppliers unable to deliver scale for EV buyers

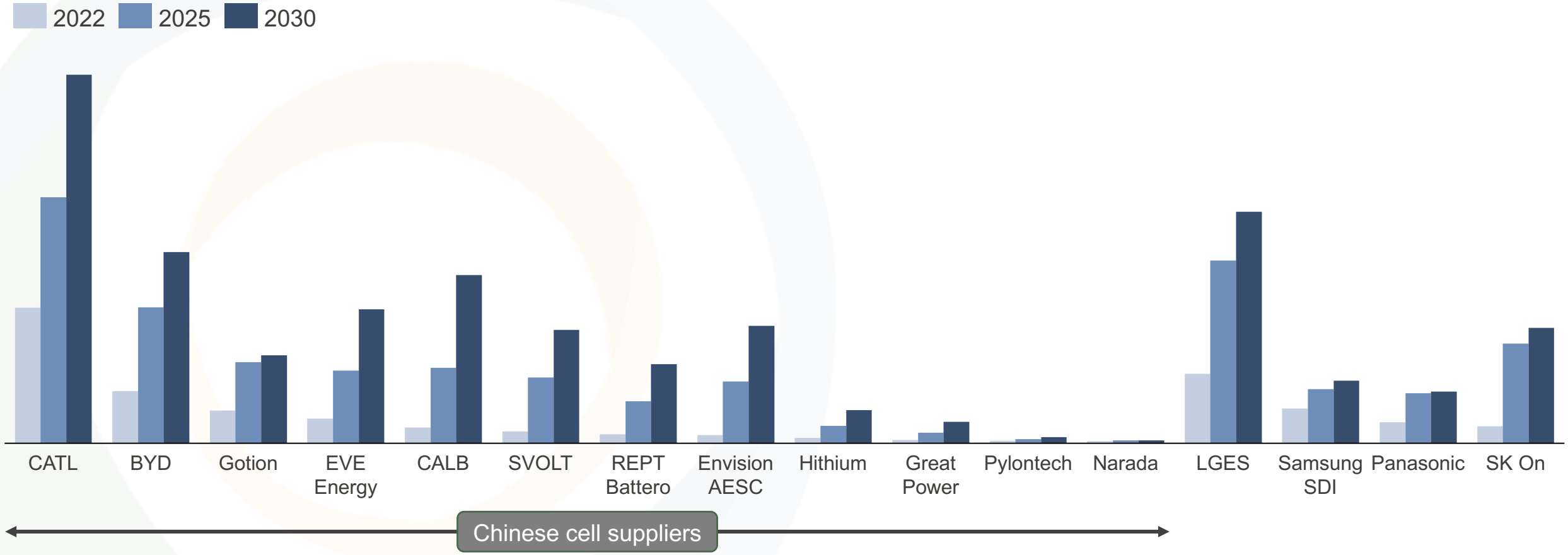



**Notes | Tier 1:** Qualified to supply more than 1 multinational OEM/EV producer outside of China. >10 GWh of annual cumulative capacity; **Tier 2:** Not yet qualified to supply multinational OEM's/EV manufacturers, qualified to supply domestic Chinese EV manufacturers, qualified to supply non xEV applications; **Tier 3:** Not yet qualified to supply EV end markets – annual cumulative capacity >1 GWh, primary focus: non xEV markets including portable and stationary (Benchmark Mineral Intelligence)

# Majority of SMIP cell suppliers are China-based

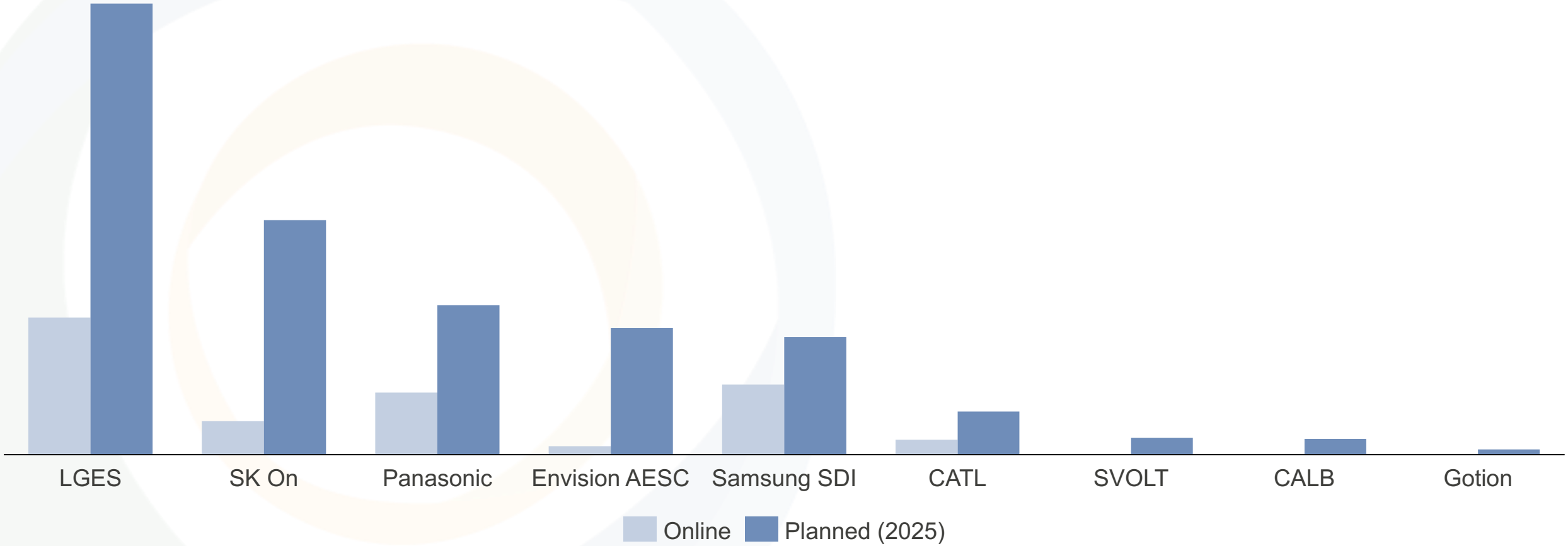
## CATL and BYD likely to remain top two domestic cell suppliers

**SMIP supplier LIB cell manufacturing capacity, China (GWh)**



# Korean and Japanese SMIP cell suppliers constitute most of the ex-China capacity

**SMIP suppliers' online and planned 2025 ex-China LIB cell manufacturing capacities (GWh)**



# Future domestic options increase with U.S. IRA incentives

## More planned cell capacity announced in the U.S. in response to the IRA

**American Battery Factory (ABF)**, founded by Lion Energy, will build a network of LFP battery factories in the U.S., with its first factory in Tucson, Arizona. The company plans to build LFP battery cells for both EV and ESS applications.

California-based **Amprius Technologies** will build a 5 GWh factory (in phases) in Colorado. The first phase, with 0.5 GWh capacity, will come online by 2025.

Canada's battery manufacturer **Electrovaya** will build the EV battery plant in Chautauqua County with around 1 GWh capacity.

**Envision AESC** plans to set up its second EV battery factory in the U.S. in partnership with BMW. The factory will be set up in South Carolina with an annual capacity of 30 GWh.

In partnership with **CATL**, **Ford** will set up a 35 GWh LFP cell production facility in Michigan.

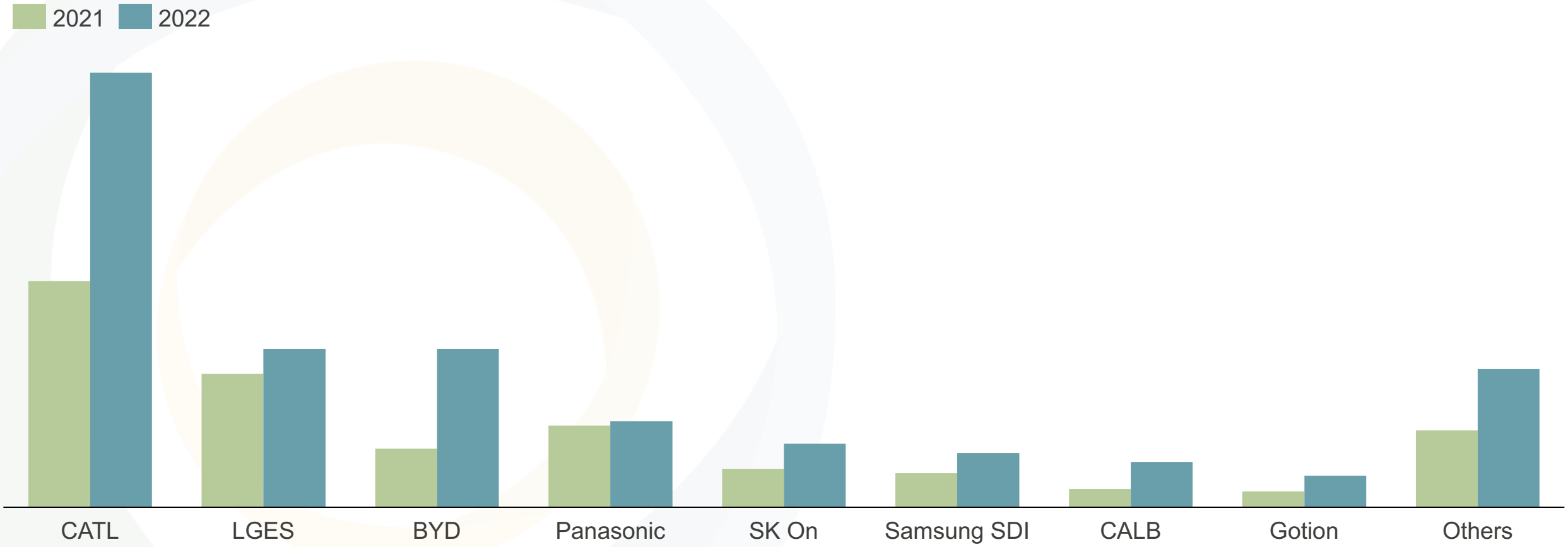
**FREYR** will parallel develop its Giga America and Giga Arctic to gain U.S. IRA incentives. Tax credits offered through the IRA would allow FREYR to receive $37 million/GWh of capacity installed in the U.S.

# Supplier Shipment Volume

# Global EV battery usage increased by 72% from 2021 to 2022

## BYD reached the same power battery installation level as LGES in 2022

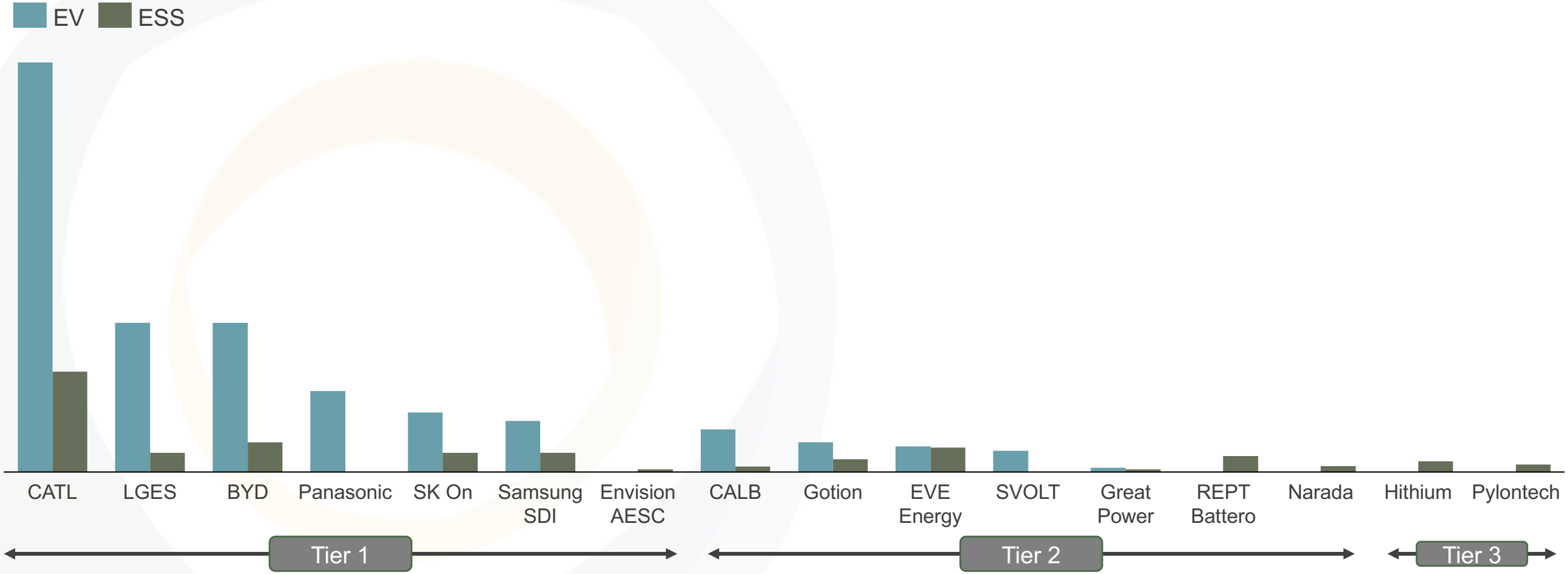
**Global EV battery cell shipment by supplier (GWh)**



# Majority of SMIP cell suppliers (Tier 1) are EV-focused

## Tier 2 and 3 cell suppliers are more inclined towards the BESS sector

**SMIP supplier battery cell shipment by end-use, 2022 (GWh)**



# Integrator Overview

# SMIP integrators for utility ESS applications

| Company | Cells | Modules | Racks | BMS | Enclosures | Integrator | Inverter | EMS | EPC |
|---|---|---|---|---|---|---|---|---|---|
| Canadian Solar | ✘ | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| Fluence | ✘ | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| IHI Terrrasun | ✘ | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| LeClanche | ✘ | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| LS Energy Solutions | ✘ | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| Mitsubishi Power | ✘ | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| Powin | ✘ | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| SYL | ✘ | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| Tesla | ~ | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| Wärtsilä | ✘ | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |

| | |
|---|---|
| ✓ | Supplier actively manufactures or performs this function |
| ✘ | Supplier does not manufacture or perform this function |
| ~ | Supplier is developing this stage of production or integration |

Ten integrators were selected for analysis in this report. These suppliers' energy storage products represent the latest battery technologies which CEA believes represent the current market.

# Report Contents: 196 Pages of In-Depth Reporting

CEA's **Supplier Market Intelligence Program** is the leading source of data and analysis in the solar and storage industries. We report on current trends and have a pulse on the latest PV solar and energy storage technologies set to disrupt the renewable energy landscape.

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